Intergenerational Inferences about Punishment: Judgments of Children of Incarcerated Parents across Development

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Abstract

Some scholars argue that punishment communicates information about punished individuals. We extended this theorizing by asking whether laypeople (237 5- to 6-year-olds, 221 7- to 8-year-olds, 220 adults) understand punishment as communicating messages about individuals not directly implicated in punishment-related scenarios and how this understanding might change across development. Three studies asked U.S. 5- to 8-year-olds and adults to indicate the extent to which they believe that adults' incarceration is attributable to their biological relatives. In Study 1, children were more likely than adults to indicate that people grow up to become incarcerated because of an incarcerated biological mother, and these judgments generalized across members of different racial groups. In Study 2, 5- to 6-year-olds, versus 7- to 8-year-olds and adults, more readily predicted that individuals born to an incarcerated mother would have contact with the legal system in the future. Study 3 showed evidence of age-related changes in essentialism using a questionnaire but did not find such evidence in a task that pitted essentialist and non-essentialist explanations against each other, suggesting that 5- to 6-year-olds may view both biological and social factors as important contributors to incarceration. Taken together, these studies highlight the importance of social learning and cognitive development in shaping reasoning about punishment's messages.

Keywords: incarceration; moral cognition; psychological essentialism; punishment; social cognition; social cognitive development

Public Significance Statement

People often stigmatize individuals who have had contact with the legal system. We show that these negative responses extend to people who are only indirectly associated with punished individuals—namely, their children. Five- to six-year-olds were especially likely to conclude that people's own legal system contact may be driven, at least in part, by potentially heritable factors. This perception decreased with age and suggests that young children, versus older individuals, may face comparatively high levels of stigma from peers based on parental incarceration.

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In the United States, spending time in a jail or prison is a relatively common social experience. Recent estimates suggest that nearly 50% of United States residents have experienced a close family member's incarceration (Enns et al., 2019). Though incarceration is commonplace, especially among racially minoritized individuals (Alexander, 2012), it remains a stigmatizing experience (Feingold, 2021). This stigma extends beyond punished individuals and can "spoil" (Goffman, 1963) the identities of family members, including children (Dunlea et al., 2022; Phillips & Gates, 2011). Although scholars often highlight such negative evaluations as one of the collateral consequences of incarceration, relatively less work has focused on examining the psychological mechanisms that may contribute to this negativity.

We built on this past work in two main ways. First, the current studies investigated the possibility that such negativity may arise, in part, due to laypeople's interpretation of legal punishment's (i.e., incarceration's) signals. Namely, laypeople may understand punishment as communicating information about the biological relatives of people who have received punishment, including their children, even though they have never experienced legal punishment themselves. Second, the current studies asked how people's understanding of punishment's messages might change across development. Study 1 began to address this topic by investigating the extent to which 5- to 6-year-olds, 7- to 8-year-olds, and adults infer that current incarceration is attributable to an incarcerated biological mother from whom the currently incarcerated person was separated as a newborn (versus an adopted mother with whom the currently incarcerated person grew up and who was not incarcerated). In other words, Study 1 adopted a *past-oriented* approach by asking participants about what features of a person's history might account for their

current contact with the legal system. Study 1 also examined the extent to which participants' judgments hinge on the race of the individual in question. Study 2 extended Study 1 by probing expectations about what individuals with incarcerated biological parents might be like in the *future*. Specifically, we tested the extent to which participants judged that children born to an incarcerated mother would have contact with the legal system as adults. Finally, Study 3 investigated whether participants infer that incarceration is attributable to a biological mother when *both* the biological and adoptive mothers had previously been incarcerated, asked participants whether the biological mother or the adoptive mother of a person who is currently incarcerated was more likely to have been incarcerated in the past, and used a previously validated questionnaire (Gelman et al., 2007) to further probe the extent to which participants view legal system contact in essentialist terms (e.g., biologically-based, stable, and immutable).

The Importance of Studying Incarceration as a Form of Punishment

Punishment is a central component of humans' psychological repertoire: the desire to punish emerges early in life (e.g., Marshall et al., 2021) and persists into adulthood (e.g., Henrich et al., 2006). Even though punishment is central to the human experience, scholars have conceptualized punishment in different ways. For instance, some scholars have defined punishment as a type of costly behavior aimed at those who cause harm or violate social norms (Clutton-Brock & Parker, 1995). However, other scholars, typically those working at the nexus of law and philosophy, have argued that punishment is more than just a behavior and that it also serves as a mechanism for social communication. These scholars often describe this idea as the *expressive theory of punishment* (Feinberg, 1965; Murphy & Hampton, 1988). Scholarship on this topic has primarily centered around what types of messages punishment—particularly punishment within the context of the legal system, such as incarceration—might express about

individuals directly implicated in a harm-related scenario, such as punished individuals and victims (e.g., Duff, 2000). For example, in the United States, legal punishment may express information about the internal wickedness of the punished individual (for a review, see Dunlea & Heiphetz, 2021-b).

A nascent but growing literature within psychology has extended scholarship on the expressive theory of punishment by examining how laypeople interpret punishment's messages (e.g., Bilz, 2016). Consistent with the focus of legal scholars and philosophers, work within psychology has primarily probed laypeople's inferences regarding what punishment communicates about those directly implicated in harm-related scenarios. For instance, laypeople understand punishment—including incarceration—as communicating negative information about punished individuals and their behaviors (e.g., that punished individuals have bad moral character, Bregant et al., 2016; Dunlea & Heiphetz, 2021-b). We built on this past scholarship by examining the extent to which people interpret punishment as also communicating information about individuals who are not directly implicated in punishment-related scenarios. Specifically, we focused on 5- to 8-year-olds' and adults' inferences about what one form of punishment (incarceration) might communicate about individuals who are biologically related to punished individuals.

We studied punishment in the context of incarceration for three main reasons. First, incarceration is a common but understudied experience. The United States has a higher incarceration rate than any other country (World Prison Brief, 2022), and more than five million children throughout the United States have experienced parental incarceration (Murphy & Cooper, 2015). These children face many difficulties, including worse behavioral, emotional, and educational outcomes than their peers whose parents are not incarcerated (Haskins et al., 2018).

Additionally, compared with peers whose parents are not incarcerated, children of incarcerated parents report fewer and less close friendships as well as more instances of negative social interactions such as teasing, ostracism, and bullying (Arditti, 2012; Nesmith & Ruhland, 2008; Phillips & Gates, 2011). However, little work in psychology has asked how children understand incarceration or why they might respond negatively to peers whose parents are incarcerated. The current work took up these questions with the twin goals of contributing to scientific understanding of social cognitive development and helping to create a more representative psychological science. The areas of life where social science focuses its spotlight communicate whose experiences are important. By shedding light on the responses that incarcerated people and their children may encounter in the course of their lives, this work seeks to expand the circle of whose experiences are considered worth studying. (For work directly probing the experiences of people who have had contact with the legal system—much of which has been conducted outside of psychology—see Brunson, 2007; Del Toro et al., 2019; Dunlea et al., 2020; Haskins et al., 2018; Jones, 2014; Pager, 2007; Western, 2018).

Second, on a theoretical level, incarceration is a helpful domain to study to better understand how people understand punishment's messages. Some evidence hints that people could rely on messages stemming from one person's punishment to make inferences about a different individual who is adjacent to—but not involved in—the punishment-related scenario. Messages communicated by punishment, akin to messages communicated via spoken language, may be imprecise. People sometimes interpret language as communicating information above and beyond what is explicitly mentioned (Chestnut & Markman, 2018). In some cases, people use messages explicitly focusing on members of certain social groups to make inferences about members of unmentioned, but thematically related, social groups. For example, children and

adults interpret statements explicitly focusing on boys ("boys are good at math") to make inferences about girls (that girls are bad at math, Moty & Rhodes, 2021). Because punishment, like language, is organized around principles of communicative inference (Sarin et al., 2021), a similar analysis may apply to people's understanding of punishment's messages. People may understand punishment as explicitly focusing on individuals involved in punishment-related scenarios but may nonetheless use such messages to make inferences about unmentioned individuals. Such a finding would advance communicative theories of punishment by showing that a single act of punishment can communicate information about those who are not involved in punishment-related scenarios. The question of whether people might interpret one person's punishment as communicating messages about their biological children is particularly relevant in the context of incarceration, both because the legal system is one of the few contexts in which children observe one adult receiving punishment from another and because prior work has already demonstrated that parental incarceration shapes children's social outcomes (Arditti, 2012; Nesmith & Ruhland, 2008; Phillips & Gates, 2011). Thus, the question of *why* children might respond negatively to peers with incarcerated parents is both theoretically and translationally meaningful.

Third, studying punishment in the context of incarceration allowed us to contribute to scientific understanding of children and the law more broadly. Much developmental research in this area has focused on children as participants in the legal system, probing topics such as their eyewitness testimony (Ceci & Bruck, 1993; Quas & Goodman, 2012), false confessions (Kassin, 2017; Malloy et al., 2014), and encounters with the police (Del Toro et al., 2019; Peterson-Badali et al., 1999). Some work with elementary-schoolers has also investigated children's third-party understanding of the legal system. This understanding increases with age; for instance, sixth-

graders are able to accurately define more legal terms (words like "oath" and "lawyer") than third-graders, who, in turn, provide more accurate definitions than kindergartners (Saywitz et al., 1990). However, even 6- to 8-year-olds have coherent concepts of jail and prison, though these concepts differ from those held by adults. For instance, children are more likely than adults to attribute incarceration to the incarcerated person's internal immoral characteristics (e.g., defining prison as a place "where bad people go"; Dunlea & Heiphetz, 2020). However, children are also more likely than adults to view prison as redemptive; in fact, 6- to 8-year-olds report that going to prison and receiving less severe forms of punishment, such as a time-out, can make someone a better person (Dunlea & Heiphetz, 2021-a). The current work built on this research to probe inferences that children and adults draw about people who have had only indirect contact with the legal system, i.e., the biological children of incarcerated parents.

Because the present studies used incarceration as an example domain in which to study how children understand punishment's messages, we also probed the extent to which such judgments hinged on the racial group membership of the individuals in question. Several lines of scholarship have highlighted racial disparities within the criminal legal system (e.g., Amemiya et al., 2020; Rucker & Richeson, 2021). Critically, some of this past work suggests that Black people are often stereotyped as criminals (Hetey & Eberhardt, 2018) and as having innate, biologically-based tendencies that underlie contact with the criminal legal system (Oshinsky, 1997). A similar pattern could emerge in the current work: participants could more readily indicate that Black individuals' contact with the legal system is due to their biological parent, perhaps through a process of inheriting a "criminal essence." The current work tested this possibility.

How Might Age-Related Changes in Socio-Moral Reasoning Shape Laypeople's Understanding of Punishment's Messages?

As mentioned above, one main goal of the current research was to examine the extent to which people understand punishment as communicating information about individuals who are not directly implicated in the punishment (e.g., biological children of incarcerated parents). Another main goal was to investigate the developmental foundations of understanding punishment's messages in this way. We began to address this topic by investigating the extent to which 5- to 6-year-olds, 7- to 8-year-olds, and adults infer that parental incarceration communicates information about the child's own contact with the legal system. Recruiting these age groups allowed for a test of two competing possibilities.

On the one hand, older participants may be *more* likely than younger participants to indicate that parental incarceration underlies a child's own future incarceration. That is, older participants may be more likely than younger participants to infer that one person's punishment communicates information about a biologically related person. This possibility stems from prior scholarship showing that younger participants typically report more optimistic perspectives than do older participants (Boseovski, 2010). Middle childhood, approximately seven years of age, marks a critical developmental milestone during which optimism begins to fade (e.g., Lockhart et al., 2002). Thus, younger participants may be optimistic that being born to an incarcerated parent does not lead to the child's own incarceration, and this effect may begin to wane around middle childhood. Testing participants who have not yet reached this developmental milestone (5- to 6-year-olds) and comparing their responses with participants who have reached this milestone (7- to 8-year-olds and adults) allowed us to extend, and compare our results with, prior work documenting fine-grained age-related changes in optimism.

On the other hand, older participants may be *less* likely than younger participants to perceive a heritable component to incarceration. This possibility stems from scholarship in two areas. First, social scientists have commonly attributed mass incarceration in the United States to structural factors, such as racism and poverty, rather than individual-level factors such as genetic inheritance (e.g., Alexander, 2012; Forman, 2017; Rucker & Richeson, 2021). In domains outside the legal system, structural thinking increases with age (Peretz-Lange et al., 2021; Vasilyeva et al., 2018). Although some prior work has found low levels of structural thinking about incarceration among both children and adults in the United States (Dunlea & Heiphetz, 2020), it is nevertheless possible that more general developments in the tendency toward structural explanations could move older children and adults away from individual-level judgments regarding why people are incarcerated. In other words, older participants may be relatively unlikely to attribute legal system involvement to the biological parent of the involved person because they are making more structural attributions instead.

Second, work on psychological essentialism also predicts an age-related decline in attributing incarceration to biological parents. Essentialism refers to the often inaccurate, but psychologically powerful, notion that certain human characteristics arise from an innate, inherited "essence" and that these essences give rise to an individual's future traits and behaviors (Gelman, 2003; Medin & Ortony, 1989). In the context of the present work, essentialist perspectives capture distinct aspects of perceived intergenerational consequences of incarceration—namely, the views that individuals inherit an "essence" from their parents that would lead to their own legal system involvement (Studies 1 and 3), that these “essences” cause children to follow in their biological parents’ footsteps by becoming implicated in the criminal legal system in the future (Studies 2 and 3), and that criminal legal system contact is

biologically-based, unalterable, and stable (Study 3). These views are not aligned with much scientific evidence highlighting the structural causes of incarceration (e.g., Alexander, 2012; Forman, 2017; Rucker & Richeson, 2021). Nevertheless, they may shape participants' responses to children of incarcerated parents, and they may do so to different extents across age. Essentialism typically decreases across development (Chalik et al., 2017; Gelman et al., 2007; Heiphetz, 2020); for instance, in one line of work, younger participants were more likely than older participants to agree that moral goodness and badness stem from inherited “essences” (Heiphetz, 2019). Thus, in the context of the present work, older participants may be less likely than younger participants to indicate that incarceration has an intergenerationally heritable component and that one person's punishment (i.e., a parent's incarceration) communicates information about a biologically related person who has not received punishment (i.e., their child).

Overview of the Current Research

Three studies examined the extent to which children and adults understand punishment as communicating messages about people who were not directly involved in the punishment. Study 1 asked 5- to 6-year-olds, 7- to 8-year-olds, and adults to indicate the extent to which they believe that a person's incarceration is due to their biological mother's incarceration. Study 1 also probed the extent to which participants’ judgments differed when reasoning about Black versus White individuals. Study 2 built on Study 1 by examining children's and adults' expectations about what individuals born to incarcerated parents might be like in the future. Finally, Study 3 investigated what inferences children and adults make when both an individual’s biological and adoptive mother have been incarcerated, probed whether participants think it is more likely for a biological or adoptive mother to have been incarcerated in the past, and examined whether

participants view criminal legal system contact as having essentialist features (e.g., stability, innateness).

The current work probed inferences about individuals born to incarcerated mothers as opposed to incarcerated fathers. We did so because younger children reason more coherently about how mothers, as opposed to fathers, might shape individuals' personal characteristics (e.g., Johnson & Salomon, 1997). Further, asking about mothers allowed us to broaden the scope of past scholarship on parental incarceration. Perhaps because the majority of incarcerated individuals in the United States are men (Carson, 2020), scholarship on parental incarceration has typically focused on paternal incarceration (e.g., Haskins, 2014; Sugie, 2012). The current work thus broadens the scope of scholarship on parental incarceration by focusing on children's and adults' judgments about the role of incarcerated mothers in shaping their children's lives.

Study 1

Study 1 investigated the extent to which 5- to 6-year-olds, 7- to 8-year-olds, and adults infer that contact with the legal system is attributable to one's biological mother. Participants learned about different individuals, each of whom was born to an incarcerated mother but raised by a mother who had never experienced incarceration. Next, participants learned that each individual eventually came in contact with the criminal legal system. Participants subsequently indicated whether such contact was due to the incarcerated biological mother (consistent with the view that contact with the legal system is communicable via genetic inheritance) or the non-incarcerated adoptive mother (consistent with the view that such contact is not inherited). Moreover, Study 1 examined the extent to which participants' judgments differed when reasoning about Black versus White individuals.

Method

Transparency and openness. In all three studies, we report how we determined sample size, all data exclusions, all manipulations, and all measures in the study, following Journal Article Reporting Standards. Research materials, data, and analytic code are available at https://osf.io/cuhrw/?view_only=1e26f8ee824c49aa922ad7462ad70a99. We analyzed data using SPSS (Version 28.0, IBM Corporation, 2021) for Studies 1-2 and R (Version 4.3.2, R Core Team, 2023) and RStudio (Version 2023.12.0+369, R Studio Team, 2022) for Study 3. We did not formally pre-register the design and analyses associated with Studies 1-2, but we did pre-register the research questions, sample size, design, and analysis plan for Study 3 at https://aspredicted.org/sgw3-76yb.pdf. Procedures were approved by the IRB at the senior author's institution under protocol AAAQ8299.

Participants. We initially planned to recruit participants in-person. However, due to the COVID-19 outbreak in Spring 2020, we tested participants remotely using an online videoconferencing platform (Zoom). We recruited participants via a departmental database, social media advertisement campaigns, and a website for families interested in signing up for research studies (https://childrenhelpingscience.com). Any English-speaking family in the United States with eligible children could participate.

A power analysis performed in G*Power (Faul et al., 2007) suggested 60 participants per age group would have 80% power (alpha=.05) to detect the smallest effect size associated with a significant comparison in a prior study (Cohen's d=.52).[1] In line with this recommendation, our

[1] We conducted Study 2 before Study 1 and used the smallest effect size associated with a significant comparison in Study 2 to determine the target sample size in Study 1. Specifically, we used the effect size associated with the difference in 5- to 6-year-olds' versus 7- to 8-year-olds' propensity to infer that a person born to an incarcerated parent would come into contact with the legal system themselves in the future. Because this effect size was smaller than other comparisons in Study 2, we reasoned that powering based on this value would provide a conservative test of hypotheses.

final sample included 68 5- to 6-year-olds (M_{age}=5.49 years, SD_{age}=.50 years; 48% female, 52% male; 77% White or European-American, 4% Black or African-American, 6% Asian or Asian-American, 12% multiracial, 1% other; 10% Hispanic or Latine [our demographic questionnaire asked about ethnicity separately from race]), and 61 7- to 8-year-olds (M_{age}=7.46 years, SD_{age}=.50 years; 41% female, 57% male, 2% other; 57% White or European-American, 7% Black or African-American, 10% Asian or Asian-American, 20% multiracial, 2% other, remainder unspecified; 3% Hispanic or Latine). We excluded data from one additional younger child because she did not appear to understand the experimental items. All children who participated received a $5 gift card.

Participants also included 78 adults between 19 and 73 years old (M_{age}=38.54 years, SD_{age}=11.89 years; 47% female, 53% male; 75% White or European-American, 3% Black or African-American, 17% Asian or Asian-American, 3% multiracial, 2% other; 6% Hispanic or Latine). As is common in studies comparing children and adults (e.g., Roberts & Gelman, 2017; Smith & Warneken, 2016), we recruited adults online via Amazon's Mechanical Turk (MTurk). We configured the online platform so that only United States residents whose approval rating was at least 95%, who had previously completed at least 1,000 other studies on the platform, and who had not completed any other studies related to this project could participate. Participants received $0.95 if they correctly answered an attention check item at the end of the study (i.e., asking them to describe the scenario they had read during the study). We excluded data from three additional adults because they incorrectly answered the attention check item. Here and in Studies 2-3, the pattern of results for all analyses remained unchanged when we opted not to exclude any participants.

Ten adults reported that they knew at least one person who had previously served time in jail or prison. Additionally, seven parents of 5- to 6-year-olds (and no parents of 7- to 8-year-olds) reported that their child knew someone who has been incarcerated. However, no significant differences in responses emerged between individuals who reported knowing at least one incarcerated individual and those who did not; see Supplementary Materials for exploratory analyses concerning this variable. In all three studies, we also conducted a series of exploratory analyses examining the extent to which participant race (White versus non-White) and ethnicity (Hispanic/Latine versus non-Hispanic/Latine) predicted participants' responses. Although individuals who belong to racial and ethnic minority groups have different experiences with the criminal legal system than do majority group members (e.g., Alexander, 2012; Forman, 2017; Rucker & Richeson, 2021), neither of these variables reliably predicted participants' responses across studies; see Supplementary Materials.

Procedure. Children completed the session in a quiet room in their homes, while adults completed the procedure via a self-paced computer task (i.e., they selected labels that best matched their response as opposed to verbally reporting their responses to an experimenter). At the start of each testing session, the experimenter told children that he or she would ask questions about another person and that there were no right or wrong answers. Following these instructions, participants completed a modified switched-at-birth task (Leshin et al., 2022; Mandalaywala et al., 2019). In our version of the task, children listened to a story in which a baby was born to a mother who was currently in jail but raised by another mother who has never been in jail. The experimenter then asked children two comprehension check questions to gauge their understanding of the story ("Whose tummy did the baby come out of?"; "And who took care of the baby?"). Participants performed well on this task: 97% of children and 100% of

adults correctly identified the biological mother and, separately, the adoptive mother. Participants who answered incorrectly received corrective feedback, and all children provided the correct answer on their second attempt.

In one block, participants learned about a baby that was born to a White mother who was currently in jail; in another block, participants learned about a baby that was born to a Black mother who was currently in jail. In each block, the biological mother and adoptive mother were the same race (i.e., both mothers were White or both mothers were Black). Prior work suggests that using familiar category labels (e.g., “White”, “Black”) can lead children to make inferences about people belonging to different racial groups when they would not otherwise do so (e.g., Roberts & Gelman, 2017). To examine participants' spontaneous inferences about White versus Black families, we did not provide racial labels. Participants answered all items about a family in a given block (i.e., the Black family) before answering items about the other family (i.e., the White family); that is, character race served as a within-participants variable. The order in which participants learned about the Black versus White family was counterbalanced across participants.

Next, participants learned three different pieces of information regarding the fact that the baby came in contact with the criminal legal system as an adult (“When this baby is all grown up, they went to jail”; “When this baby is all grown up, they were a criminal”; “When this baby is all grown up, they broke the law”). Participants learned each piece of information about each baby and, after learning a given piece of information, indicated whether legal system contact was due to the biological mother or the adoptive mother (“e.g., Do you think that is because of this mom [pointing to biological mother] or this mom [pointing to adoptive mother]?”). The experimenter followed up each item with a more fine-grained item (“How much do you think it’s

because of this mom [the mother that the child selected]? Is it a little bit because of this mom, or a lot because of this mom?"). We adapted this two-step approach from prior research in developmental psychology (e.g., Bregant et al., 2016; Dunlea & Heiphetz, 2021-a). The order of items referring to each type of criminal legal system contact was counterbalanced across participants.

We assigned responses numerical values from -1.5 (attributing criminal legal system contact "a lot" to the adoptive mother) to +1.5 (attributing criminal legal system contact "a lot" to the biological mother). Because participants could not obtain a score of 0 on a single trial, this coding scheme allowed for the distance between scores on the same side of 0 (e.g., +1.5, indicating that the participant thought that criminal legal system contact was "a lot" attributable to the biological mother, and +0.5, indicating that the participants thought that criminal legal system contact was "a little" attributable to the biological mother) to correspond to the distance between scores on opposite sides of zero (+0.5 and -0.5, with the latter score indicating that the participant thought that criminal legal system contact was "a little" attributable to the adoptive mother).

Results

In all studies, we adjusted analyses that included multiple comparisons using a Bonferroni correction; we report the corrected alpha level alongside unadjusted *p* values. See Supplementary Materials for descriptive statistics for each item.

The three items measuring the extent to which participants attributed criminal legal system contact to the biological mother had acceptable reliability (α=.81). Thus, we created one composite attribution score by averaging across the three items. We analyzed this composite score using two types of analyses (Figure 1). First, we conducted a 3 (Participant Age: 5- to 6-

year-old vs. 7- to 8-year-old vs. adult) x 2 (Character Race: Black vs. White) mixed ANOVA with repeated measures on the second factor.[2] This analysis revealed a main effect of Participant Age ($F(2, 204)=35.74$, $p<.001$, $\eta_p^2=.26$). Neither the Character Race nor the Participant Age x Character Race interaction reached significance (ps$\geq.259$). To better understand the effect of Participant Age, we compared average attribution scores across each age group. This analysis included three comparisons; therefore, p values needed to be .017 or lower to pass the Bonferroni-corrected significance threshold. Adults were less likely than children in both age groups to attribute criminal legal system contact to the biological mother (5- to 6-year-olds vs. adults: $p<.001$, Cohen's $|d|=1.41$, 95% CI_{diff}: [-1.44, -.88]; 7- to 8-year-olds vs. adults: $p<.001$, Cohen's $|d|=.92$, 95% CI_{diff}: [-1.17, -.58]). A significant difference between 5- to 6-year-olds and 7- to 8-year-olds did not emerge ($p=.064$, Cohen's $d=.35$, 95% CI_{diff}: [-.02, .59]).

Second, we conducted a series of one-sample t-tests to compare mean responses in each age group to the midpoint of the scale (0, the value that would be expected if participants, on average, were completely uncertain about whether people encountered the legal system because of the biological or adoptive mother). We conducted these analyses for participants' judgments concerning Black and, separately, White characters. This analysis included six comparisons; therefore, p values needed to be .008 or lower to pass the Bonferroni-corrected significance threshold.

Significant differences emerged among some, but not all, groups. Among 5- to 6-year-olds, composite attribution scores were above the scale midpoint for both Black ($t(67)=7.52$,

[2] In line with the approach used in several other programs of research in developmental psychology (e.g., Ahl & Dunham, 2019; Dunlea & Heiphetz, 2021-a; Roberts & Gelman, 2017; Yang et al., 2022), we treated age as a categorical rather than continuous variable in order to allow us to compare children and adults. This approach would not be possible with a continuous approach because our sample did not include participants between the ages of 9 and 17 years.

p<.001, Cohen's $|d|$=.91, 95% CI_{diff}: [.47, .81]) and White (t(67)=6.72, p<.001, Cohen's $|d|$=.82, 95% CI_{diff}: [.44, .80]) characters. However, different patterns emerged among participants in other age groups. Among 7- to 8-year-olds, composite attribution scores were above the scale midpoint for Black (t(60)=3.02, p=.002, Cohen's $|d|$=.41, 95% CI_{diff}: [.15, .66]), but not White (t(60)=2.16, p=.035, Cohen's $|d|$=.28, 95% CI_{diff}: [.02, .54]) characters. Finally, adults' composite attribution scores were below the scale midpoint for both Black (t(77)=-5.05, p<.001, Cohen's $|d|$=.57, 95% CI_{diff}: [-.75, -.33]) and White (t(77)=.53, p<.001, Cohen's $|d|$=.53, 95% CI_{diff}: [-.74, -.30]) characters.

Discussion

Study 1 investigated the extent to which 5- to 8-year-olds and adults attribute contact with the legal system to a person's biological mother. Two main results emerged. First, elementary schoolers were more likely to attribute criminal legal system contact to an incarcerated biological mother than were adults. This suggests that, with age, people may become less likely to perceive incarceration as communicating a message about biological relatives.

Second, we did not find evidence that participants' judgments differed when answering questions about Black versus White individuals. One potential interpretation of this pattern of results is that elementary schoolers and adults form judgments about whether certain characteristics are biologically transmittable and subsequently generalize such reasoning across people belonging to different social groups. For instance, children and adults may conclude that if a certain characteristic is transmitted between birth parents and children who belong to social group X, then a similar biological process may occur among members of social group Y. However, it is difficult to draw strong conclusions from null results; it is possible that individuals

do make different judgments about Black versus White individuals and that our methodology failed to capture this nuance. Therefore, caution is warranted in interpreting this result.

Study 2

Study 1 investigated the extent to which 5- to 6-year-olds, 7- to 8-year-olds, and adults provided responses consistent with viewing a characteristic as heritable when making causal attributions about why an individual might come in contact with the criminal legal system. Study 2 extended Study 1 by probing the extent to which children and adults made predictions about whether an individual will come in contact with the criminal legal system in the future.[3] To do so, participants learned about an individual who was born to an incarcerated mother but adopted by a mother who had never been incarcerated. Participants subsequently indicated whether that individual would come in contact with the criminal legal system in the future. Because children were more likely than adults in Study 1 to attribute contact with the legal system to an individual's biological mother, children could also be especially likely to make negative predictions about what individuals with an incarcerated biological mother might be like in the future (i.e., that such individuals would also encounter the criminal legal system). Study 2 investigated this possibility.

Method

Participants. Participants included 91 5- to 6-year-olds (M_{age}=5.47 years, SD_{age}=.50 years; 56% female, 44% male; 41% White or European-American, 18% Black or African-

[3] This study was part of a broader project that also measured children's moral evaluations of and responses to children of incarcerated parents (e.g., participants indicated whether children of incarcerated parents knew that immoral behaviors were wrong). Children reported more certainty that peers without, versus with, incarcerated parents possessed moral knowledge, and this effect was stronger among 7- to 8-year-olds than among 5- to 6-year-olds (Dunlea et al., 2022). However, these responses were unrelated to children's responses on the switched-at-birth task reported here.

American, 15% Asian or Asian-American, 1% Native American or Pacific Islander, 19% multiracial, 4% other, remainder unspecified; 21% Hispanic or Latine) and 71 7- to 8-year-olds (M_{age}=7.64 years, SD_{age}=.48 years; 52% female; 37% White or European-American, 21% Black or African-American, 14% Asian or Asian-American, 14% multiracial, 7% other, remainder unspecified; 18% Hispanic or Latine). We excluded data from two 5- to 6-year-olds and two 7- to 8-year-olds because of parental interference during testing (n=3) or experimenter error (n=1). We recruited children from a departmental database and from a museum, both located in the northeastern United States, and from a public library in the midwestern United States. As in other studies (e.g., Dunlea & Heiphetz, 2021-a; Marshall et al., 2020), testing venue did not predict children's responses. All children who participated received a sticker or other small prize.

Participants also included 81 adults between 22 and 70 years old (M_{age}=40.53 years, SD_{age}=12.03 years; 43% female, 56% male, 1% other; 85% White or European-American, 5% Black or African-American, 8% Asian or Asian-American, 1% Native American or Pacific Islander, 1% multiracial; 6% Hispanic or Latine). As in Study 1, we configured the online platform so that only United States residents whose approval rating was at least 95% and who had previously completed at least 1,000 other studies on the platform could participate. Participants received $0.55 if they correctly answered an attention check item at the end of the study asking them to describe the scenario they had read. We excluded data from five additional adults because they incorrectly answered the attention check item.[4]

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[4] As noted in Footnote 3, we conducted Study 2 as part of a testing session that also included other measures for a broader project on perceptions of children whose parents are incarcerated. As a result, we estimated the desired sample size based on the analysis that would require the largest number of participants to detect our estimated effect, which we do not report here because it is not central to the questions addressed in this paper. However, sensitivity analyses (power=80%, alpha=.05) suggest that our sample size was sufficient to reveal the effects observed here. For the pairwise comparisons following our omnibus ANOVA, the comparison between younger and older children could detect an effect of $|d|$=.45, and the effect that actually emerged was $|d|$=.52. The comparison between younger children and adults could detect an effect of $|d|$=.46, and the effect that actually emerged was $|d|$=.66. For the one-

Four adults reported that they knew at least one person who has previously served time in jail or prison. Additionally, fifteen parents reported that their child (seven 5- to 6-year-olds, eight 7- to 8-year-olds) knew someone who has been incarcerated. However, no significant differences in responses emerged between individuals who reported knowing at least one incarcerated individual and those who did not; see Supplementary Materials for relevant exploratory analyses concerning this variable.

Procedure. The procedure for Study 2 was identical to Study 1, with three main exceptions. First, unlike in Study 1 where the stimuli depicted racial information, the stimuli in Study 2 were race-neutral stick figures. As in Study 1, the experimenter displayed each image on a laptop computer screen. Second, as opposed to completing the experimental session via Zoom, children in Study 2 completed the session in a quiet room located in a developmental psychology laboratory, a children's museum, or a library. Third and most importantly, instead of telling participants that the baby had come in contact with the criminal legal system, the experimenter asked children three yes-or-no questions about what the baby would be like in the future ("When this baby is grown up, will they go to jail?"; "When this baby is grown up, will they be a criminal?"; "When this baby is grown up, will they break the law?"). We adapted this measure from prior studies using the switched-at-birth paradigm to examine children's predictions about future behavior (e.g., Gülgöz et al., 2019; Gelman & Wellman, 1991). The order of these items was counterbalanced across participants, and each question was followed by a second, more fine-grained question ("Are you very sure, kind of sure, or not very sure about that?"). As in Study 1, we assigned responses numerical values from -2.5 (indicating that the participant was "very

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sample *t*-tests, the analysis with younger children could detect an effect of $|d|$=.30, while the observed effect was $|d|$=.56; the analysis with older children could detect an effect of $|d|$=.34, while the observed effect was $|d|$=1.17; and the analysis with adults could detect an effect of $|d|$=.32, while the observed effect was $|d|$=2.08.

sure" that the baby would *not* come in contact with the criminal legal system in the future) to +2.5 (indicating that the participant was "very sure" that the baby would come in contact with the criminal legal system in the future). Adults completed the procedure online and read all experimental items to themselves.

Results

The three items probing participants' predictions about what an individual born to an incarcerated parent might be like in the future had acceptable reliability (α=.68). Thus, we created one composite future behavior score by averaging across the three items. We analyzed this composite score using two types of analyses (Figure 2).

First, we conducted a one-way, 3-level (Participant Age: 5- to 6-year-old vs. 7- to 8-year-old vs. adult) between-participants ANOVA. This analysis revealed a main effect of Participant Age ($F(2, 240)=10.85$, $p<.001$, $\eta_p^2=.08$). To better understand this effect, we compared average future behavior scores across each age group. This analysis included three comparisons; therefore, *p* values needed to be .017 or lower to pass the Bonferroni-corrected significance threshold. Both 7- to 8-year-olds and adults were less likely than 5- to 6-year-olds to infer that a person born to an incarcerated parent would come in contact with the legal system in the future (5- to 6-year-olds vs. 7- to 8-year-olds: $p<.001$, Cohen's $|d|=.52$, 95% CI_{diff}: [-.84, -.21]; 5- to 6-year-olds vs. adults: $p<.001$, Cohen's $|d|=.66$, 95% CI_{diff}: [-.96, -.35]). However, a significant difference between 7- to 8-year-olds and adults did not emerge ($p=.820$, Cohen's $|d|=.04$, 95% CI_{diff}: [-.36, .28]).

Second, we conducted a series of one-sample *t*-tests to compare mean responses in each age group to the midpoint of the scale (0, the value that would be expected if participants, on average, were completely uncertain about whether an individual would come in contact with the

criminal legal system in the future). This analysis included three comparisons; therefore, *p* values needed to be .017 or lower to pass the Bonferroni-corrected significance threshold. Across age groups, composite future behavior scores were below the scale midpoint (5- to 6-year-olds: $t(90)=-5.32$, $p<.001$, Cohen's $|d|=.56$, 95% CI_{diff}: [-.89, -.41]; 7- to 8-year-olds: $t(70)=-9.85$, $p<.001$, Cohen's $|d|=1.17$, 95% CI_{diff}: [-1.49, -.99]; adults: $t(80)=-18.75$, $p<.001$, Cohen's $|d|=2.08$, 95% CI_{diff}: [-1.40, -1.13]).

Discussion

Study 2 examined laypeople's predictions regarding whether individuals born to an incarcerated parent will come into contact with the criminal legal system in the future. Two main findings emerged. First, average future behavior scores were below the midpoint of the scale for participants in each age group. Thus, we did not find strong evidence that participants predicted that individuals born to an incarcerated parent would themselves become implicated in legal system. Second, although *absolute* future behavior scores indicated that participants were generally optimistic about the futures of individuals born to incarcerated parents, *relative* differences emerged across some age groups. Five- to 6-year-olds were more likely than 7- to 8-year-olds and adults to indicate that an individual born to an incarcerated parent would also become implicated in the criminal legal system.

In conjunction with Study 1, these findings suggest that age-related decreases in attributing incarceration to one's biological mother broadly track age-related declines in negative inferences about the future of a child whose biological mother is incarcerated. However, it remains unclear why these age-related declines might occur. Study 3 asked whether younger children may be more likely than older children to exhibit essentialist judgments about criminal legal system contact. Studies 1-2 used versions of the switched-at-birth task, which prior scholars

have commonly used to study essentialism. The interpretation in this prior scholarship hinged on the fact that attributing a child's characteristic to a biological parent who never saw the child following birth, versus an adoptive parent who raised the child, reflected the essentialist view that the characteristic in question stems from biological inheritance (e.g., Gelman & Wellman, 1991; Hirschfeld, 1995). Study 3 used a previously validated essentialism questionnaire (e.g., Gelman et al., 2007) to directly probe the extent to which participants across each age group used multiple components of essentialism (e.g., inheritance as well as immutability and innateness) to understand criminal legal system contact.

An alternative explanation for our findings could be that, given the studies' design, we gauged participants' propensity to match characteristics rather than their tendency to link criminal legal system contact to biology. For instance, in Study 1, participants learned about a child born to an incarcerated mother and raised by a non-incarcerated mother. Subsequent attributions of incarceration to the biological mother could reflect the fact that the child in the story shared a characteristic with her but not with the adoptive mother. The essentialism questionnaire allowed us to test this possibility because participants could not use a matching strategy to answer those items. Study 3 also employed two novel versions of the switched-at-birth task to further probe children's use of matching—one that described both the biological and adoptive mother as having been incarcerated prior to their child's birth and one that asked participants to predict, based on the child's incarceration, whether the biological or adoptive mother was also incarcerated.

Study 3

Studies 1-2 examined the extent to which 5- to 8-year-olds and adults view criminal legal system contact as heritable. Study 3 addressed alternative explanations for these initial findings and asked whether children and adults show essentialism about criminality (Gelman et al., 2007).

Method

Participants. All participants completed the study online. We recruited children via a laboratory database and they completed the activity online using Discoveries Online, an asynchronous testing platform (https://discoveriesonline.org/; Rhodes et al., 2020). Any English-speaking family in the United States with eligible children could participate. To ensure that only children participated, we recorded all testing sessions and reviewed the videos to confirm a parent was present to consent and provide demographic information, and a child provided assent and completed the activity independently. We sent all families who participated a $5 Amazon gift card.

A power analysis performed in G*Power (Faul et al., 2007) suggested 53 participants per age group would have 80% power (alpha=.05) to detect a medium effect size, as the smallest effect sizes for significant results in Study 1 were of approximately medium size (Cohen's d>.50). In line with this recommendation, we pre-registered collecting data from approximately 60 participants per age group to match Study 1's sample sizes. Our final sample included 62 5- to 6-year-olds (M_{age} =6.13 years, SD_{age} =0.64 years; 58% female, 40% male, 2% other; 61% White or European-American, 2% Black or African-American, 15% Asian or Asian-American, 16% multiracial, 2% other, remainder unspecified; 15% Hispanic or Latine) and 65 7- to 8-year-olds (M_{age} =7.91 years, SD_{age} =.63 years; 48% female, 52% male; 63% White or European-American, 3% Black or African-American, 17% Asian or Asian-American, 17% multiracial; 12% Hispanic

or Latine). As pre-registered, we excluded data from 13 additional 5- to 6-year-olds and 19 additional 7- to 8-year-olds because of parent or sibling interference during testing (n=8), answering at least one comprehension check incorrectly more than once (n=13), or repeat participation (n=11).[5]

Participants also included 61 adults between 22 and 74 years old (M_{age} =43.13 years, SD_{age}=13.91 years; 70% female, 30% male; 71% White or European-American, 16% Black or African-American, 5% Asian or Asian-American, 3% Native American or Pacific Islander, 5% multiracial; 8% Hispanic or Latine). We recruited adults from Prolific. As in Studies 1-2, we configured the online platform so that only United States residents whose approval rating was at least 95% and who had previously completed at least 1,000 other studies on the platform could participate. Participants received $3 if they correctly answered an attention check item at the end of the study asking them to describe a scenario they had read. As pre-registered, we excluded data from 9 additional adults because they answered at least one comprehension check incorrectly more than once (n=5), incorrectly answered the attention check item (n=3), or admitted inattention at the end of the study (n=1).

[5]When participants completed the study multiple times, we included only their first responses. We did not inadvertently re-contact any of these participants. Since data collection was asynchronous, these 11 participants completed the study more than once of their own volition, and we were able to exclude their additional participations based on the provided video recordings. Further, although not pre-registered, we excluded the following additional participants due to testing on an asynchronous platform: n=29 attempted participation but did not upload video recordings, had poor video quality, or their video cut off prematurely, and so we could not confirm they were children; n=7 adults masqueraded as children; n=7 did not provide clearly discernable parental consent or child assent in their video recordings; n=2 received the same ID on the testing platform, so we could not confirm which data corresponded to the provided participant recording with the same ID; n=1 participant's parent reported they were 9 years old, which was outside of our target age range; n=1 participant's parent did not provide us with their child's age or date of birth.

In Studies 1-2, we did not observe significant differences between participants who reported knowing at least one incarcerated individual and those who did not. Thus, we did not ask participants in Study 3 whether they knew anyone who had served time in jail or prison.

Procedure. Both children and adults completed the procedure via a self-paced computer task with video recorded instructions. Prior to starting the study, all participants listened to an audio clip and correctly identified an animal noise to confirm they could hear the study. An audio recording of an experimenter then walked participants through the consent process and all tasks. The consent process and general instructions given to participants (e.g., that there were no right or wrong answers) were similar to Studies 1-2. The text of the experimenter recording also appeared on the screen during the videos and when participants answered questions.

Participants completed three tasks, and we counterbalanced the order in which the tasks appeared across participants. As in Study 2, we employed race-neutral stick figures as stimuli.

"Both moms incarcerated" switched-at-birth task. Participants completed a modified switched-at-birth task similar to Study 1. Participants received three trials in counterbalanced order. In each trial, participants heard about a biological mother, an adoptive mother, and their child. We counterbalanced the order in which participants heard about the biological and adoptive mother. Unlike in Study 1, both the adoptive and biological mother had previously broken the law and been incarcerated. After answering two comprehension check questions to gauge their understanding of the story ("Whose tummy did the baby come out of?"; "And who took care of the baby?"), participants learned one of the three pieces of information about the baby coming in contact with the criminal legal system themselves as an adult ("When this baby is all grown up, they went to jail"; "When this baby is all grown up, they are a criminal"; "When this baby is all grown up, they broke the law"). Diverging again from Study 1's method,

participants learned just one piece of information about three different babies, rather than answering each question about the same baby. After learning the given piece of information for that trial, participants indicated whether legal system contact was due to the biological mother or the adoptive mother (e.g., "When this baby is all grown up, they broke the law. Do you think that is because of this [biological] mom or this [adoptive] mom?"). Participants then answered a more fine-grained question ("How much do you think it's because of this mom? Is it a little bit because of this mom, or a lot because of this mom?"). We scored this task identically to Study 1.

"Reversed" switched-at-birth task. Participants again learned about an adoptive mother, a biological mother, and a baby, and we again counterbalanced the order that participants heard and answered questions about the mothers. Next, participants learned that the child had grown up, broken the law, and become incarcerated. Participants then answered whether the biological mother or the adoptive mother was previously incarcerated ("A long time ago, before this grown-up was born, one of these moms also broke the law and went to jail for a while. Who do you think it was? Was it this mom, whose tummy this grown-up came out of, or this mom, who took care of them?"). Subsequently, participants answered a finer-grained question, similar to Study 2 ("How sure are you that this mom broke the law and went to jail? Are you very sure, kind of sure, or not very sure?"). For this task, participants only completed one trial. We scored this task identically to Study 2.

Essentialism questionnaire. In a third task, participants answered a novel questionnaire designed to assess the extent to which they view criminality in essentialist terms. The questionnaire included six items adapted from past work on children's essentialism (Gelman et al., 2007; Heiphetz et al., 2017; Heiphetz, 2019). To complete the questionnaire, participants first

learned about a character who had broken the law and gone to jail. Participants then answered the following questions in a random order:

1. **Environment:** Why did this person break the law and go to jail? Is it because of things that people around them did?
2. **Blood:** In the future, will scientists be able to figure out if someone will break the law and go to jail by looking at their blood under an x-ray or microscope?
3. **Brain:** Some other people did not break the law and go to jail. Do you think that this person's brain is different from the brain of someone who did not break the law and go to jail?
4. **Born:** Do you think that this person was born a criminal?
5. **Always:** Do you think this person has always been a criminal?
6. **Change:** Do you think this person can change whether or not they are a criminal if they want to?

Participants could respond “yes”, “maybe”, or “no” to each question. We scored participants’ responses as 3=“yes,” 2=“maybe,” and 1=“no,” except for the first and sixth questions, which we reverse-scored.

Results

“Both moms incarcerated” switched-at-birth task. The three different trials measuring the extent to which participants attributed criminal legal system contact to the biological mother had acceptable reliability (α=.69). Thus, we created one composite future behavior score by averaging across the three items. We analyzed this composite score using two types of tests (Figure 3). First, we conducted a one-way, 3-level (Participant Age: 5- to 6-year-olds vs. 7- to 8-year-olds vs. adults) between-participants ANOVA. This analysis did not reveal a main effect of

Participant Age ($F(2, 184)=2.10$, $p=.126$, $\eta_p^2=.02$). Second, we conducted a series of one-sample *t*-tests to compare mean responses in each age group to the midpoint of the scale (0, the value that would be expected if participants, on average, were completely uncertain about whether people came into contact with the legal system because of the biological mother or the adoptive mother). This analysis included three comparisons; therefore, *p* values needed to be .017 or lower to pass the Bonferroni-corrected significance threshold. Composite attribution scores were significantly below the scale midpoint for older children and adults (7- to 8-year-olds: $t(64)=-4.65$, $p<.001$, Cohen's $|d| =.58$, 95% CI_{diff}: [-.67, -27]; adults: $t(60)=-5.36$, $p<.001$, Cohen's $|d|=.69$, 95% CI_{diff}: [-.72, -.33]), but not for younger children (5- to 6-year-olds: $t(60)=-2.15$, $p=.036$, Cohen's $|d|=.28$, 95% CI_{diff}: [-.46, -.02]).

"Reversed" switched-at-birth task. We analyzed participants' scores using two types of tests (Figure 4). First, we conducted a one-way, 3-level (Participant Age: 5- to 6-year-olds vs. 7- to 8-year-olds vs. adults) between-participants ANOVA. This analysis did not reveal a main effect of Participant Age ($F(2, 182)=0.79$, $p=.455$, $\eta_p^2<.01$). Second, we conducted a series of one-sample *t*-tests to compare mean responses in each age group to the midpoint of the scale (0, the value that would be expected if participants, on average, were completely uncertain about whether it was the biological mother or the adoptive mother who had come into contact with the legal system previously). This analysis included three comparisons; therefore, *p* values needed to be .017 or lower to pass the Bonferroni-corrected significance threshold. No age group significantly differed from the midpoint (5- to 6-year-olds: $t(60)=-0.66$, $p=.510$, Cohen's $|d|=.09$, 95% CI_{diff}: [-.63, .31]; 7- to 8-year-olds: $t(62)=0.92$, $p=.360$, Cohen's $|d| =.12$, 95% CI_{diff}: [-.25, .68]; adults: $t(60)=0.78$, $p=.441$, Cohen's $|d|=.10$, 95% CI_{diff}: [-.25, .56]).

Essentialism questionnaire.[6] The six different questions did not achieve acceptable reliability (α=.24). Thus, we completed all analyses separately for each of the six questions (Figure 5). First, we conducted a one-way, 3-level (Participant Age: 5- to 6-year-olds vs. 7- to 8-year-olds vs. adults) between-participants ANOVA for each question. This analysis revealed main effects of Participant Age for four of the six questions: the Blood, Born, Always, and Change questions, *p*s<.002. For all four of these questions, pairwise comparisons revealed that younger children exhibited more essentialism than both older children and adults. We did not observe a significant effect of age for the Environment and Brain questions. Second, we conducted a series of one-sample *t*-tests to compare mean responses in each age group to the midpoint of the scale (2, the value that would be expected if participants, on average, were uncertain). This analysis included 18 comparisons (three comparisons for six questions); therefore, *p* values needed to be .003 or lower to pass the Bonferroni-corrected significance threshold. Taken together, 5-to 6-year-olds were consistently no different from the midpoint in their responding on all questions (*p*s>.032). Meanwhile, 7- to 8-year-olds and adults responded significantly below the midpoint for four of the six questions (the Blood, Born, Always, and Change questions, *p*s<.001). See the Supplementary Materials for more details.

For the essentialism questionnaire, 5- to 6-year-olds overall exhibited significantly higher scores than both 7- to 8-year-olds and adults on four of the six questions. One plausible explanation for this result could be that younger children were simply more uncertain when responding to questions, or generally more likely to respond "maybe" rather than definitively yes

[6] We pre-registered that we would test whether participants' responses to the essentialism questionnaire items were related to their responses on the two switched-at-birth tasks. This analysis did not yield consistent, reliable results across any of the age groups. Taken together, participants' general essentialism of legal system contact was not associated with their views of the intergenerational transmission of criminality. See the Supplementary Materials for a full write up and tables describing the results of this analysis.

or no. If this were the case, we would expect younger children's modal response to be "maybe." To explore this possibility, we include a table of count data for all the essentialism questionnaire items (see Table 1). Instead of primarily choosing "maybe" or the uncertain response, younger participants were equally likely to say "no" or the non-essentialist response overall, and they were notably more likely than older children and adults to say "yes" or the essentialist response.

Discussion

Study 3 further investigated whether people view criminal legal system contact as inherited and directly tested whether they view criminality as possessing additional core features of essentialism, such being immutable and innate. Three key findings emerged. First, when told about a biological and adoptive mother who were both incarcerated—thus pitting biology and upbringing against each other equally—participants were *not* more likely to attribute incarceration to biology over upbringing. We did find some evidence for age-related change: 5- to 6-year-olds' attributions were no different from the midpoint, whereas 7- to 8-year-olds' and adults' attributions significantly favored the adoptive mother. However, we did not find a significant difference between the age groups, a finding that would have provided stronger evidence for age-related differences. Second, when asked whether an incarcerated individual's biological or adoptive mother had previously been incarcerated, participants in all age groups exhibited uncertainty regarding whether a biological or adoptive mother was more likely to have been previously incarcerated, given that their child was incarcerated. Together, these two findings suggest that, when the possibility of matching based on shared characteristics is eliminated from the study design, young children may not privilege biology over upbringing.

Our third key finding, however, showed that when asked directly about whether they view incarceration in essentialist terms via a broader essentialism questionnaire, 5- to 6-year-olds

exhibited significantly higher scores than both 7- to 8-year-olds and adults on most of the questions—and notably never exhibited significantly lower scores. Importantly, younger children's higher scores do not seem to be the result of uncertainty (most often selecting "maybe" as their answer). Instead, younger children were more likely than adults and older children to provide an essentialist answer (see Table 1). While the switched-at-birth paradigms did not reveal age-related declines in attributing incarceration to biology, this finding suggests that essentialism of criminal legal system contact more generally wanes with age, as is the case with essentialist reasoning in other domains (e.g., Chalik et al., 2017; Gelman et al., 2007; Heiphetz, 2020).

At first blush, the results across these three tasks might seem contradictory. We found no evidence of essentialism by younger children in the two switched-at-birth tasks—a task commonly used as a measure of heritability, one core feature of essentialism—but we did observe evidence of essentialism by younger children in the questionnaire, where we assessed other core features of essentialism. This pattern suggests that 5- to 6-year-olds may *both* make essentialist judgments about incarceration *and* think other forms of criminal legal system experience, such as being raised by an incarcerated parent, are sufficient to predict a person's future incarceration. With age, children may become less likely to think incarceration can be based in biology but continue thinking that upbringing will play an important role. The General Discussion elaborates on these ideas.

General Discussion

Some scholars conceptualize punishment as expressive—that is, as both a behavior and a tool for communication (e.g., Feinberg, 1965). Of the studies that have empirically examined how laypeople interpret punishment's messages, most have focused on what punishment might

communicate about individuals directly implicated in punishment-related scenarios (e.g., Bregant et al., 2016; Dunlea & Heiphetz, 2021-b). We built on this scholarship by probing the extent to which 5- to 6-year-olds, 7- to 8-year-olds, and adults interpret punishment's messages as communicating information about one group of individuals who are indirectly involved in punishment—children born to incarcerated parents.

In Study 1, 5- to 8-year-olds were more likely than adults to attribute a person's incarceration to their biological mother, who was incarcerated and did not raise her child, than to their adopted mother, who was not incarcerated and did raise the child. That is, 5- to 8-year-olds were more likely than adults to infer that a biological mother's punishment communicated information about a person not directly involved in the punishment scenario (i.e., her child). Study 1 also revealed that these judgments generalized across Black and White families. Study 2 built on Study 1 by probing expectations about what individuals with an incarcerated biological mother might be like in the future. Five- to 6-year-olds were less optimistic than 7- to 8-year-olds and adults about the future of individuals born to an incarcerated parent. Namely, 5- to 6-year-olds were more likely than any other age group tested to indicate that an individual born to an incarcerated mother would themselves become implicated in the criminal legal system. In Study 3, participants did not differ in inferences about whether a biological mother or an incarcerated mother had been previously incarcerated based on her child's incarceration. Participants also did not differ in attributions of incarceration to an adoptive parent who raised the child over a biological parent when both were described as having previously been incarcerated. However, 5- to 6-year-olds exhibited essentialism about incarceration to a greater extent than both 7- to 8-year-olds and adults when asked questions probing other core features of essentialism in a non-forced-choice paradigm. In sum, these studies suggest that young children

do not see contact with the legal system in uniquely essentialist terms. Rather, they may think that both biological and social factors play some role in incarceration.

Theoretical Implications of the Present Research

The current work makes several theoretical contributions. First, this research investigates how age-related changes in social cognition may shape laypeople's understanding of punishment's signals. We tested between two alternatives: that people's understanding of punishment as a signal of negative information about a punished individual's biological children could strengthen, or wane, across development. Studies 1-2 found evidence supporting the latter possibility. In Study 1, younger participants were more likely than older participants to attribute a person's incarceration to their biological mother, who had been incarcerated and was separated from her child at birth. Moreover, Study 2 suggested that pessimism regarding the future outcomes of children with an incarcerated mother decreased with age. This finding *opposes* the possibility that optimistic perspectives would decline with age.

Study 3 tested whether viewing incarceration as stemming from internal, biologically-based "essences" decreases with age and fuels younger children's attributions of a person's incarceration to their biological mother. We found mixed evidence. On the one hand, younger children were more likely to view criminal legal system contact in essentialist terms than older children and adults when answering items on a questionnaire that did not pit essentialist and non-essentialist explanations against each other. On the other hand, younger children were no more likely to attribute incarceration to a biological parent over an adoptive parent when both were described as previously incarcerated, and were no more likely to infer a biological parent had previously been incarcerated than an adoptive parent. That is, when our stimuli did pit essentialist and non-essentialist conceptualizations against one another, children did not privilege

either conceptualization. Together, these results suggest that although children may view incarceration as stemming from essentialist factors (e.g., a person's biological make-up) to some extent, they also understand incarceration to arise from non-essentialist factors such as upbringing.

Second, the current studies advance scholarship on expressive theories of punishment. Of the extant studies probing how laypeople understand punishment's messages, most have focused on what punishment might communicate about individuals directly implicated in punishment-related scenarios (e.g., Bregant et al., 2016; Dunlea & Heiphetz, 2021-b). We extended prior work by examining the extent to which children and adults also understand punishment as communicating information about individuals who are not directly involved in punishment (individuals born to incarcerated parents). In the current work, young children—particularly 5- to 6-year-olds—drew some causal inferences about one person on the basis of another person's punishment. For instance, in Study 1, 5- to 6-year-olds were particularly likely to conclude that a person's incarceration was attributable to their biological mother despite the fact that the biological mother was separated from her child at birth and therefore did not exert direct influence over the child over the course of their life. In Study 2, 5- to 6-year-olds were also more likely than older participants to view information about maternal incarceration as informative about the life trajectory of that mother's child (i.e., they were more likely than older participants to expect that an incarcerated mother's child would grow up to experience contact with the legal system themselves). These findings advance legal and psychological scholarship by showing that at least some people interpret punishment as signaling something meaningful about individuals who are not directly implicated in punishment-related scenarios.

Third, the current work highlights the generalizability of laypeople's inferences about punishment's messages across members of different racial groups. Within the United States, participants often stereotype Black people as criminals (Hetey & Eberhardt, 2018) and as having innate, biologically-based tendencies that underlie such contact with the criminal legal system (Oshinsky, 1997). Thus, participants in Study 1 could have more readily indicated that Black, versus White, people experience contact with the legal system due to a biological cause. However, we did not find significant differences in participants' evaluations of Black, versus White, individuals. The fact that such differences did not emerge may suggest that people form judgments about whether certain characteristics are heritable and subsequently generalize such reasoning across people belonging to different social groups. However, another possibility is that people actually do make different judgments about why Black versus White individuals come into contact with the legal system and that our methodology was not sensitive enough to capture this nuance.

Limitations and Directions for Future Research

The present work makes several theoretical contributions and focuses on probing laypeople's judgments about biological children of incarcerated parents, a population that is not currently well-represented in the psychological literature. However, like all research, the current studies are limited in some ways and raise questions for future investigation.

One limitation is that we have not fully explored younger children's competing preferences for biology and upbringing. We found that 5- and 6-year-olds seemed more likely than 7- and 8-year-olds and adults to think that incarceration is based in biology, but also that younger children did not reliably favor biology when it was pitted against upbringing. Future

research could devise a method better equipped to determine which is *more* important to younger children in reasoning about future incarceration—biology or upbringing.

Further, by asking about incarcerated mothers, this work expands the literature on maternal incarceration. However, we do not know how participants would respond when asked about fathers. Future work can build on this approach by asking about incarcerated fathers, particularly among participants who are old enough to understand the genetic connection between fathers and their biological children.

In addition to broadening the scope of the types of dependent measures included in this program of research, future work can broaden to scope of individuals who participate in this research. Though some participants knew incarcerated individuals (see Supplementary Materials), future work can aim to recruit children of both incarcerated and non-incarcerated parents to better understand the role of parental incarceration in shaping people's inferences. Two lines of research suggest that parental incarceration may shape children's socio-moral reasoning in nuanced ways. In one study, Dunlea and Heiphetz (2020) investigated how children of incarcerated parents view incarcerated people whom they do not know. Children of incarcerated parents, like children whose parents were not incarcerated, readily attributed criminal legal system contact to internal factors (immoral character, desires). In a separate but related study, Dunlea and colleagues (2020) found that children reported overwhelmingly positive views of their own incarcerated parents. Together, these lines of work suggest that children express positivity toward their incarcerated parents but may not generalize this positivity toward strangers who face a similar situation as their parents. Thus, when asked to make judgments about people who have personal experience with the legal system, children of incarcerated parents may report negativity when reasoning about people whom they do not know

(i.e., that such individuals can “pass on” criminal “essences” to their progeny) but positivity when reasoning about their own parents (i.e., that their own parents do not possess criminal “essences” that can be transmitted via biology). Future work can test this possibility.

Conclusion

We examined 5- to 6-year-olds’, 7- to 8-year-olds’, and adults’ reasoning about punishment’s intergenerational messages. In Study 1, the view that incarceration was attributable to an incarcerated biological mother waned with age. Study 2 extended Study 1 by finding that 5- to 6-year-olds, versus 7- to 8-year-olds and adults, more readily predicted that individuals born to an incarcerated parent would encounter the criminal legal system in the future. Study 3 found that 5- to 6-year-olds were more likely to view criminality as biologically-based, innate, stable, and immutable than both 7- to 8-year-olds and adults, but that 5- to 6-year-olds may view both biology and upbringing as somewhat influential rather than favoring biology. Together, these findings suggest that 5- to 6-year-olds understand punishment as communicating information about people who are not directly involved in punishment-related scenarios (e.g., children of incarcerated parents). However, with age, individuals may narrow the scope of their inferences and become less likely to endorse the view that a biological parent's incarceration licenses inferences about their children's propensity to encounter the legal system.

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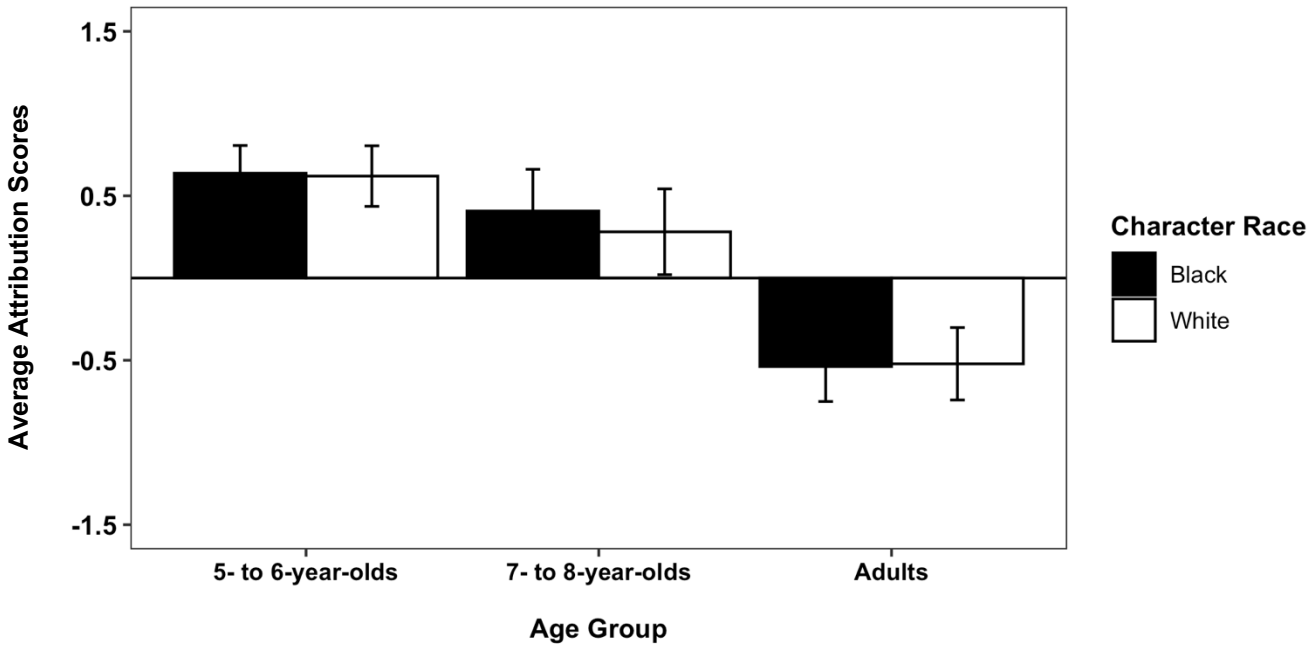

Figure 1. Average attribution scores, Study 1. Scores above the scale midpoint (0) indicate that participants attributed criminal legal system contact, on average, to the biological mother. Scores below the scale midpoint indicate that participants attributed criminal legal system contact, on average, to the adoptive mother. A score of 0 indicates uncertainty about why contact with the legal system occurred. Error bars represent 95% confidence intervals.

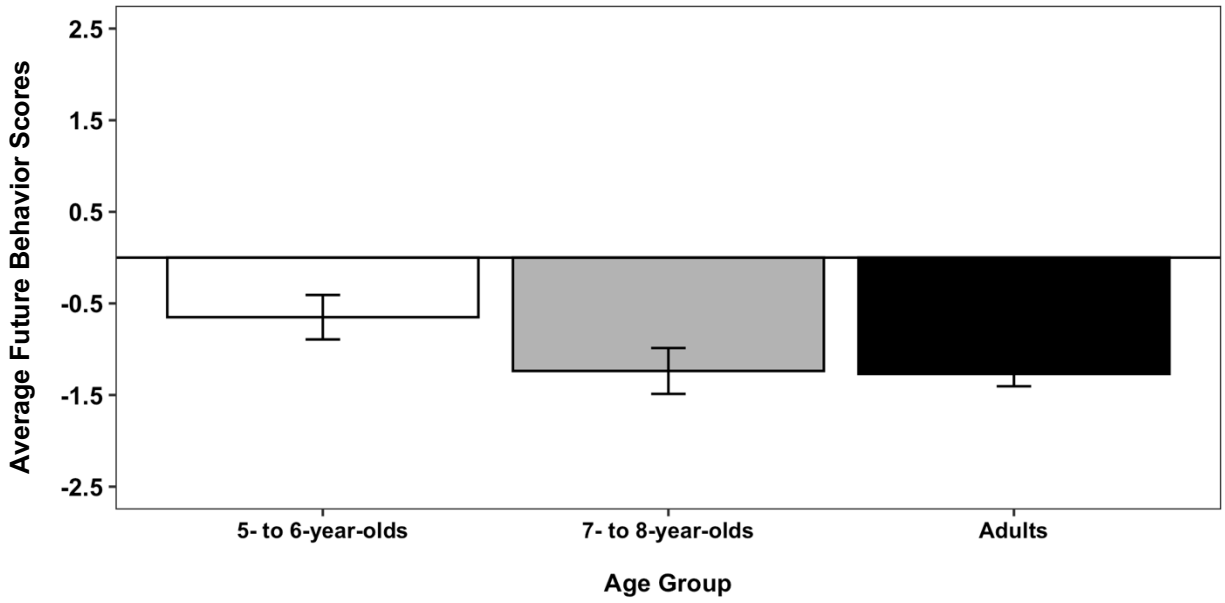

Figure 2. Average future behavior scores, Study 2. Scores above the scale midpoint (0) indicate reports that individuals born to an incarcerated parents *will* come in contact with the legal system in the future, whereas scores below the scale midpoint indicate reports that these individuals *will not* experience legal system contact. A score of 0 indicates uncertainty about whether children of incarcerated parents will come in contact with the criminal legal system. Error bars represent 95% confidence intervals.

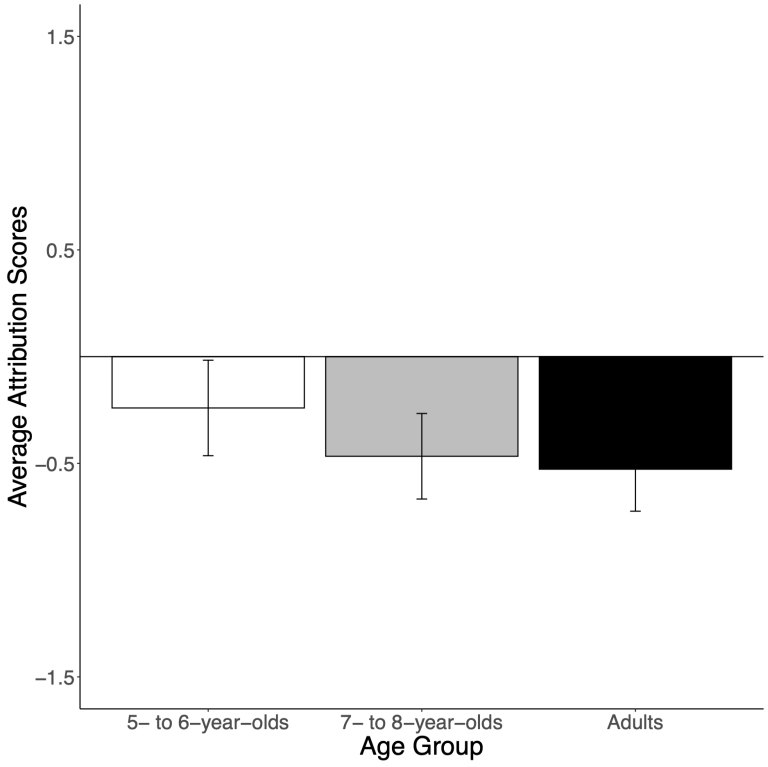

Figure 3. Average attribution scores for the "both moms incarcerated" switched-at-birth task, Study 3. Scores above the scale midpoint (0) indicate that participants attributed criminal legal system contact, on average, to the biological mother. Scores below the scale midpoint indicate that participants attributed criminal legal system contact, on average, to the adoptive mother. A score of 0 indicates uncertainty about why contact with the legal system occurred. Error bars represent 95% confidence intervals.

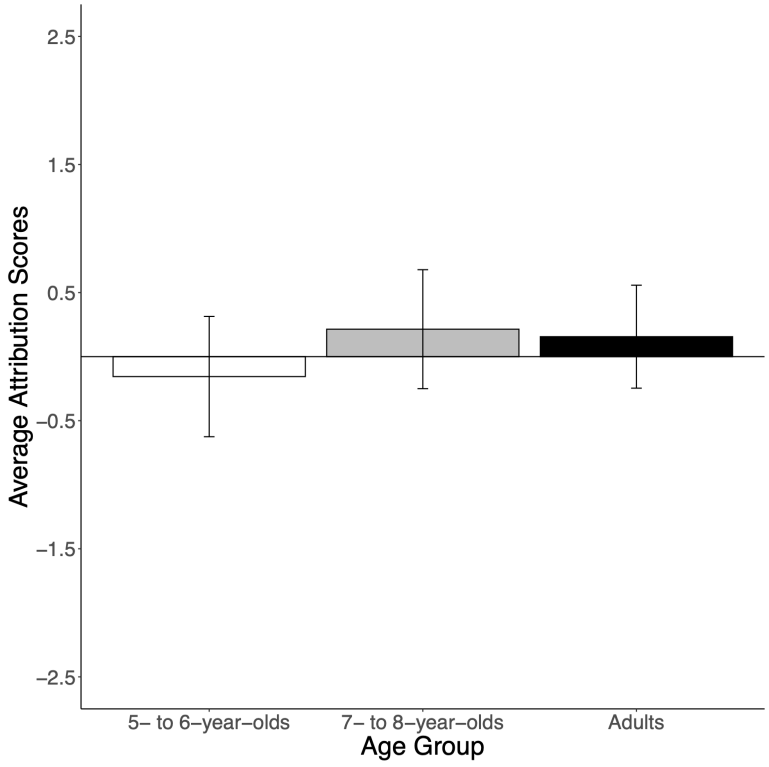

Figure 4. Average attribution scores for the "reversed" switched-at-birth task, Study 3. Scores above the scale midpoint (0) indicate reports that the biological mother came in contact with the legal system in the past, whereas scores below the scale midpoint indicate reports that the adoptive mother experienced legal system contact. A score of 0 indicates uncertainty about which parent came in contact with the criminal legal system. Error bars represent 95% confidence intervals.

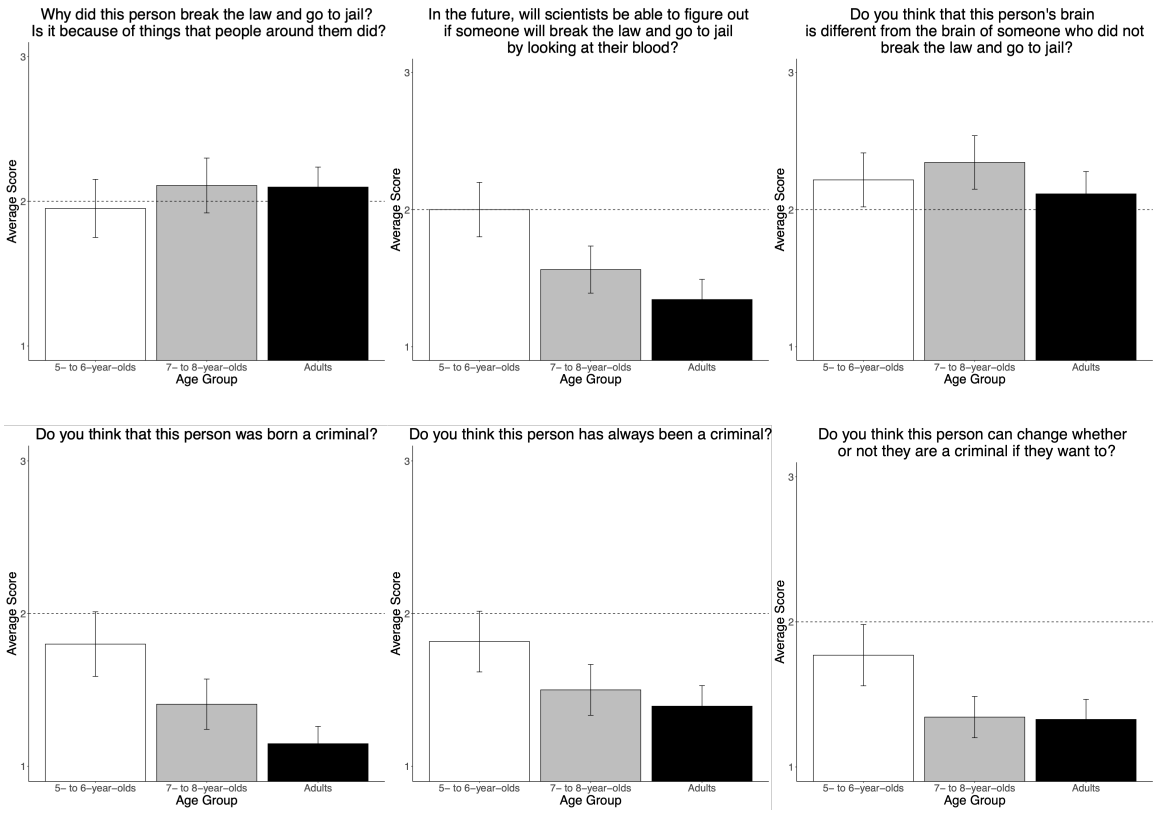

Figure 5. Average scores for each question in the essentialism questionnaire, Study 3. Scores above the midpoint (2) indicate relatively essentialist views of legal system contact, whereas scores below the scale midpoint indicate relatively non-essentialist view. A score of 2 indicates uncertainty about essentialism regarding legal system contact. Error bars represent 95% confidence intervals.

Table 1

Count data for the essentialism questionnaire items, Study 3 (1=non-essentialist response, 2=maybe, 3=essentialist response)

Essentialism Question	Age Group	# selecting non-essentialist response	# selecting "maybe"	# selecting essentialist response
Environment	5- to 6-year-olds	20	24	17
	7- to 8-year-olds	15	27	22
	Adults	6	43	12
Blood	5- to 6-year-olds	18	25	18
	7- to 8-year-olds	35	22	7
	Adults	43	15	3
Brain	5- to 6-year-olds	12	23	25
	7- to 8-year-olds	12	18	34
	Adults	9	36	16
Born	5- to 6-year-olds	27	18	15
	7- to 8-year-olds	44	14	6
	Adults	54	5	2
Always	5- to 6-year-olds	24	23	13
	7- to 8-year-olds	38	20	6
	Adults	38	22	1
Change	5- to 6-year-olds	29	17	15
	7- to 8-year-olds	45	16	3
	Adults	43	16	2
Total	5- to 6-year-olds	130	130	103
	7- to 8-year-olds	189	117	78
	Adults	193	137	36